

## TW9906

3x10-bit Multi-Standard Comb Filter Video Decoder with YCbCr Component Input

FN7770

Rev.0.00

February 11, 2011

Intersil|Techwell's TW9906 is a high quality NTSC/PAL/SECAM multi-standard video decoder plus YCbCr component inputs designed for multimedia applications.

TW9906 uses the mixed-signal 2.5V/3.3V CMOS technology to provide a low-cost and low-power integrated solution. Minimum external components are required due to its integrated analog front-end containing anti-aliasing filter, AGC, clamping, and three 10-bit high speed ADCs. For composite inputs, an adaptive comb filter and luma/chroma processing produce exceptionally high quality pictures using proprietary techniques. A high quality internal scaling engine offers arbitrarily filtered down scaling of the output video. Its VBI capability is enhanced with built-in VBI slicer, filter, FIFO and VBI data pass-through function to support common data services.

### Features

- NTSC (M, 4.43) and PAL (B, D, G, H, I, M, N, N combination), PAL (60), SECAM support with automatic format detection
- Advanced synchronization processing for VCR trick mode and weak signal
- Software selectable analog inputs allows any of the following combinations:
  - Up to five composite video inputs
  - Four composite, one S-video or one YCbCr input.
  - Two composite, two S-Video or two YCbCr inputs.
  - Three composite, one S-Video and one YCbCr input.
- Three 10-bit ADCs with clamping circuit and anti-aliasing filter.
- Fully programmable static or automatic gain control for the Y channel
- Programmable white peak control for the Y channel
- Adaptive 4H comb filter for the best image quality.
- PAL delay line for color phase error correction
- Digital sub-carrier PLL for accurate color decoding
- Digital Horizontal PLL and advanced synchronization processing for non-standard video signals

- Programmable hue, brightness, saturation, contrast, and sharpness
- Blue stretch
- Image enhancement with 2D peaking and CTI.
- Automatic color control and color killer
- IF compensation filter
- Detection of level of copy protection according to Macrovision standard
- YCbCr input supports 480i/576i and sub-sampled 480p/576p with auto-detection.

### Video Output

- Support both free-running and line-locked clock outputs
- Programmable output cropping
- High quality horizontal filtered scaling with arbitrary scale down ratio
- VMI 1.4 compatible 10-bit or 20-bit pixel interface
- ITU-R 601 or ITU-R 656 compatible output YCbCr(4:2:2) output format
- VBI slicer supporting industrial standard data services with data packet filter capability
- Built-in VBI FIFO for convenient access through host interface
- VBI data pass through, raw ADC data for Intericast™
- Field locked audio clock generator

### Miscellaneous

- Two wire MPU serial bus interface
- Power-down mode
- Typical power consumption 0.25W
- Single 27MHz crystal for all standards
- Supports 24.54MHz and 29.5MHz crystal for high quality square pixel format
- 3.3V / 5V tolerant I/O
- 2.5V / 3.3V Power Supply
- 80 pin TQFP package

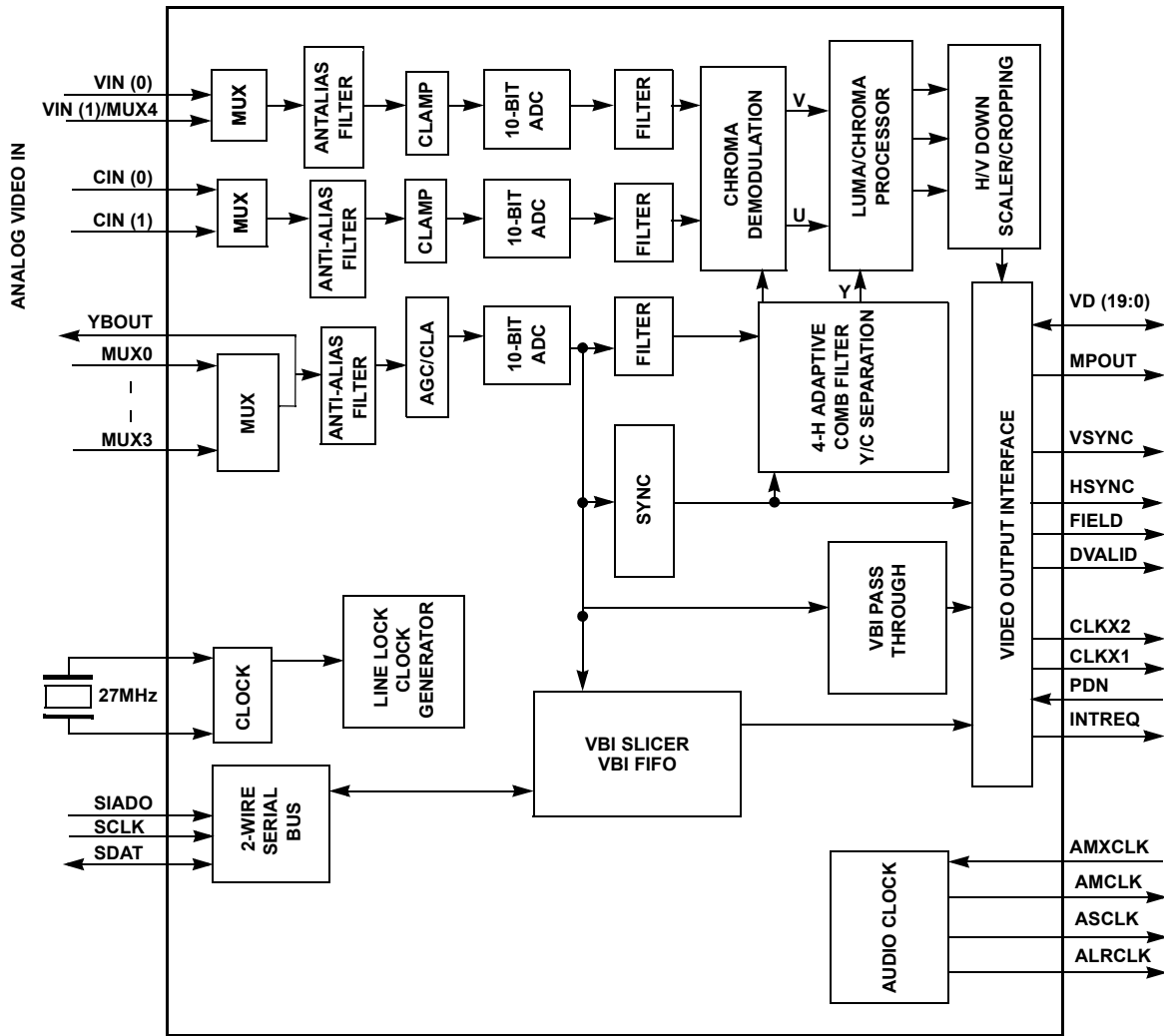


FIGURE 1. TW9906 BLOCK DIAGRAM

© Copyright Intersil Americas LLC 2011. All Rights Reserved.

All trademarks and registered trademarks are the property of their respective owners.

For additional products, see [www.intersil.com/en/products.html](http://www.intersil.com/en/products.html)

Intersil products are manufactured, assembled and tested utilizing ISO9001 quality systems as noted in the quality certifications found at [www.intersil.com/en/support/qualandreliability.html](http://www.intersil.com/en/support/qualandreliability.html)

Intersil products are sold by description only. Intersil may modify the circuit design and/or specifications of products at any time without notice, provided that such modification does not, in Intersil's sole judgment, affect the form, fit or function of the product. Accordingly, the reader is cautioned to verify that datasheets are current before placing orders. Information furnished by Intersil is believed to be accurate and reliable. However, no responsibility is assumed by Intersil or its subsidiaries for its use; nor for any infringements of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Intersil or its subsidiaries.

For information regarding Intersil Corporation and its products, see [www.intersil.com](http://www.intersil.com)